

containing 6, 7, 8, or 9 repeating PQP amino acids sequences in Region II thereof, and species of full length pertactin of *B. bronchiseptica* containing 1, 2, or 3 repeating GGXXP amino acid sequences (SEQ ID NO: 25) in Region I thereof, where XX can be FD, FG, or AV. These full length pertactins and mixtures of these pertactins in any combination of the repeating sequences are thus provided by this invention.

Page 16, third full paragraph, lines 16-20:

It will be immediately apparent that this invention provides polypeptide fragments of the pertactin of *B. bronchiseptica*, where the fragments comprise 6, 7, 8, or 9 repeating PQP amino acid sequences in Region II thereof or 1, 2, or 3 repeating GGXXP amino acid sequences (SEQ ID NO: 25) in Region I thereof. Mixtures of these polypeptide fragments in any combination of the repeating sequences are also within the scope of this invention.

Page 17, second full paragraph, lines 14-22:

In another embodiment, this invention provides a composition comprising a mixture of *Bordetella bronchiseptica* pertactin variants, wherein each *Bordetella bronchiseptica* pertactin variant comprises Region I of a pertactin of *Bordetella bronchiseptica*, and further wherein each *Bordetella bronchiseptica* pertactin variant comprises 1, 2, or 3 repeating GGXXP amino acid sequences (SEQ ID NO: 25) in Region I thereof, and the at least two of the *Bordetella bronchiseptica* pertactin variants differ in the number of the repeating GGXXP amino acid sequences contained therein.

This composition can also comprise pertactins of *Bordetella parapertussis*, *Bordetella*

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